

Appl No. 10/071,786

Response dated July 1, 2005

Reply to Office Action of April 4, 2005

IN THE CLAIMS:

Please amend the claims to read as follows

- 1. (Currently amended) A toggle bolt device comprising;
- a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;
  - b) a shaft that extends continuously through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;
  - c) a plate that carries a plurality of locking members that each vary in thickness, wherein the plate and the locking members are attached to the shaft at the first end portion of the body, the locking members being attached to the first end portion of the shaft;
  - d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position; and
  - e) a nut that is connectable to the body at the partially threaded portion; and
  - f) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.
2. (Previously presented) The toggle bolt of claim 1 wherein there are at least three locking members a nut that is connectable to the body at the partially threaded portion.
3. (Currently amended) A toggle bolt device comprising;
- a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;
  - b) a shaft that extends through the bore and having respective first and second end

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portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

c) a plate mounted to the shaft and carrying a plurality of locking members that each vary in thickness, the locking members are attached to the shaft at the first end portion of the body, the locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft and the plate, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;

e) wherein the locking members have curved outer surfaces; and

f) a nut that is connectable to the body at the partially threaded portion;

g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

4. (Previously presented) A toggle bolt device comprising;

a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;

b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

c) a plurality of locking members that each vary in thickness, the locking members are attached to the shaft at the first end portion of the body, the locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;

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c) a nut that is connectable to the body at the partially threaded portion; and  
d) wherein the body has curved camming surfaces at the socket that are positioned to guide movement of the locking members as they travel between the extended and retracted positions; and

g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

5. (Currently amended) A toggle bolt device comprising;

a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;

b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

c) a plurality of locking members that each vary in thickness, the locking members are attached to the shaft at the first end portion of the body, the locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;

e) a nut that is connectable to the second end portion of the body at the partially threaded portion; and

f) a plate attached to the shaft, the locking members being mounted on the plate; and

g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

6. (Original) The toggle bolt of claim 5 wherein the shaft has a first threaded portion that connects with the plate and a second threaded portion that engages the body.

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7. (Currently amended) A toggle bolt device comprising;
- a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;
  - b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;
  - c) a plate carrying a plurality of locking members that each vary in thickness, the locking members and plate being attached to the shaft at the first end portion of the body, the plate and locking members being attached to the first end portion of the shaft;
  - d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;
  - e) a nut that is connectable to the body at the partially threaded portion; and
  - f) wherein the shaft has a tool receptive portion at one end thereof that enables rotation of the shaft relative to the body; and
  - g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.
8. (Original) The toggle bolt of claim 1 wherein the nut engages the body generally opposite the locking members.
9. (Original) The toggle bolt of claim 1 wherein the shaft moves linearly relative to the central longitudinal axis of the body when the shaft is rotated.
10. (Currently amended) A fastener for joining two members together, each member having an opening therethrough of a selected diameter, comprising;
- a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is partially threaded,

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the first end portion of the body having a socket and a plurality of circumferentially spaced apart, radially extending slots that communicate with the socket;

b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being partially externally threaded and rotatable relative to the body, the partially externally threaded portion of the shaft engaging the threaded portion of the bore;

c) a plate carrying a plurality of locking members, that are the plate and locking members being attached to the shaft at the first end portion of the body, the plate and locking members being attached to a plate mounted to the first end portion of the shaft;

d) the plate and locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body and the selected diameter in the extended position and being contained within the body at the socket and inside the selected diameter in the retracted position;

e) a nut that is connectable to the body at the partially threaded portion; and

wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

11. (Currently amended) A bolt apparatus comprising:

a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;

b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

c) a plate carrying a plurality of locking members attached to the shaft next to the first end portion of the body, the plate and locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions

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responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position; and

c) a nut that is connectable to the body at the partially threaded portion; and

d) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

12. (Previously presented) The bolt apparatus of claim 11 wherein there are at least three locking members a nut that is connectable to the body at the partially threaded portion.

13. (Currently amended) A bolt apparatus comprising;

a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;

b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

c) a plate carrying a plurality of locking members attached to the shaft next to the first end portion of the body, the locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;

e) wherein the locking members have curved outer surfaces; and

f) a nut that is connectable to the body at the partially threaded portion; and

g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

14. (Currently amended) A bolt apparatus comprising;

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- a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;
- b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;
- c) a plate carrying a plurality of locking members that each vary in thickness, the plate and locking members being attached to the shaft at the first end portion of the body, the plate and locking members being attached to the first end portion of the shaft;
- d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;
- e) a nut that is connectable to the body at the partially threaded portion; and
- f) wherein the body has curved camming surfaces at the socket that are positioned to guide movement of the locking members as they travel between the extended and retracted positions; and
- g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

15. (Currently amended) A bolt device comprising;

- a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;
- b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

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c) a plurality of locking members attached to the shaft next to the first end portion of the body, the locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;

e) a nut that is connectable to the second end portion of the body at the partially threaded portion; and

f) a plate attached to the first end portion of the shaft, the locking members being mounted on the plate; and

g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

16. (Previously presented) The toggle bolt of claim 5 wherein the shaft has a first threaded portion that connects with the plate and a second threaded portion that engages the body.

17. (Currently amended) A toggle bolt device comprising;

a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;

b) a continuous shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

c) a plate that carries a plurality of locking members, the plate attached to the shaft next to the first end portion of the body, the locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft and the plate, the locking members extending radially beyond



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the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position;

c) a nut that is connectable to the body at the partially threaded portion; and  
d) wherein the shaft has a tool receptive portion at one end thereof that enables rotation of the shaft relative to the body; and

g) wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.

18. (Previously presented) The bolt of claim 1 wherein the nut engages the body generally opposite the locking members.

19. (Previously presented) The bolt of claim 1 wherein the shaft moves linearly relative to the central longitudinal axis of the body when the shaft is rotated.

20. (Currently amended) A fastener for joining two members together, each member having an opening therethrough of a selected diameter, comprising;

a) an elongated body having an outer surface with an at least partially threaded portion, first and second end portions and a central, longitudinal bore that is partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart, radially extending slots that communicate with the socket;

b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being partially externally threaded and rotatable relative to the body, the partially externally threaded portion of the shaft engaging the threaded portion of the bore;

c) a plate and a plurality of locking members that are attached to the shaft at the first end portion of the body, the locking members being attached to a plate mounted to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft and plate, the locking members extending radially beyond the outer surface of the body and the selected diameter in the extended position and being contained within the body at the socket and inside the selected diameter in the retracted position;

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c) a nut that is connectable to the body at the partially threaded portion; and  
D wherein the shaft extends continuously from the plate to the nut, enabling load transfer between the plate and the nut via the shaft.